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EXAMINER
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2697	

DATE MAILED: 08/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☒ This action is **FINAL**.　　　　2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-33_ is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-33_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _05 June 2003_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

　　If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All　b)☐ Some * c)☐ None of:

　　　1.☐ Certified copies of the priority documents have been received.

　　　2.☐ Certified copies of the priority documents have been received in Application No. _____ .

　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
　　　　application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

　　a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)	4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) ☐ Notice of Informal Patent Application (PTO-152)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .	6) ☐ Other: .

DETAILED ACTION

Drawings

1. New drawings were received on June 2, 2003. These drawings

are approved by the examiner.

Specification

2. The new specification has also been approved an inserted into

the case.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35

U.S.C. 112:

> The specification shall conclude with one or more claims particularly
> pointing out and distinctly claiming the subject matter which the
> applicant regards as his invention.

3. **Claims 15 and 26** are rejected under 35 U.S.C. 112, second

paragraph, as being indefinite for failing to particularly point

out and distinctly claim the subject matter which applicant

regards as the invention.

Claim 15 includes the limitation, "said halfband filtering

follows said interpolating". Claim 15 depends from Claim 12,

which includes the limitations, "halfband filtering said

plurality of data points with a half band filter to provide

intermediate data points" and "interpolating the intermediate

data points with an interpolator". Based on the production and

then processing of these intermediate data points, Claim 12

ascertains a set order to the processes, wherein the

interpolating must follow the filtering. This aspect of Claim 12

conflicts with the limitation of Claim 15 listed above.

Claim 26 is rejected on the same basis as Claim 15 for

including the same limitation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which

forms the basis for all obviousness rejections set forth in this

Office action:

> (a) A patent may not be obtained though the invention is not identically
>
> disclosed or described as set forth in section 102 of this title, if the
>
> differences between the subject matter sought to be patented and the
>
> prior art are such that the subject matter as a whole would have been
>
> obvious at the time the invention was made to a person having ordinary
>
> skill in the art to which said subject matter pertains. Patentability
>
> shall not be negatived by the manner in which the invention was made.

4. **Claims 1-6, 10, and 17-18** are rejected under 35 U.S.C. 103(a)

as being unpatentable over Taylor (USPN 5982305) in view of

applicant's admitted prior art.

Regarding **Claim 1**, Taylor discloses a digital sample rate

converter for use with a computer system. The system of Taylor

is taught as being able to change the variable input signal

sample rate to a specified output signal sample rate (col. 3,

lines 2-6 and col. 9, lines 24-40). This reads on "a method for

converting an input signal to one of a plurality of differing

output sample rates". The process involved with changing the

rates first involves receiving a discrete time input signal x(n) and applying it to an interpolator (106) (col. 7, lines 17-36). This part of the process reads on "receiving, at an input sample rate, a plurality of data points, associated with the input signal". The process then involves the use of a predetermined filter (110) that is designed for signals that fall within a specific predetermined range (col. 7, lines 37-49). The standard parts of a digital signal include a passband, which includes the frequencies with the image information, as well as a guardband or transition band. As the system initially receives the entire input signal and the filter is arranged to know a predetermined range for the passband of the image, this inherently means that the system has knowledge of the details of the initial transition band of the input signal as well. In the case of Taylor, the input rate is particularly obtained at the beginning of the signal processing procedure (col. 8, lines 44-47). These inherent signal properties, along with the determining of the frequency of the input signal read on "operating on said plurality of data points to associate said signal with a predetermined set of parameters" and "said set of parameters including a first transition band". The filter (110) includes a transition band, the effects of which are applied to obtain a filtered signal w(k) which is then applied to a decimation function (114) to finally convert the initial signal to the desired sample rate (col. 7, lines 50-67 and col. 8, lines 1-9). Taylor, again, specifically states that the system is able to

work on a continuous range of output sample rate (col. 3, lines

30-34). The factors involved in changing this rate are

particularly taught as being selectable, according to a chosen

filter value, and a table of possible input and output sample

rates are included in the disclosure (col. 4, lines 9-22 and col.

8, lines 51-60 and col. 9, lines 24-40). This processing, the

filtering followed by the final stage of signal decimation reads

on "dynamically varying said input sample rate associated with

said input signal to any one of the plurality of differing output

sample rates by an interpolator having associated therewith a

second transition band". Again, the output is reproduced at the

different sampling rate, but without adversely affecting the

original signal quality, which reads on "a second signal is

produced having a sequence of data samples approximating the

input signal" (col. 3, lines 2-6).

In regards though to the specifics of the circuitry of his

system, Taylor does not specify:

- that the width of this second transition band is a

function of the spectral separation of the

transition band and image of the input signal

In the specification of the application, the applicant

discloses several examples of previous forms of sample rate

converters that are well known in the art. Specifically, the

applicant discloses the various components of previously well

known sample rate converters, including a variety of circuits

referred to as "interpolation filters" which perform
interpolation and filtering within as part of the component (page
4, lines 14-16, 20, 31 and Figs. 1B, 2B, 2E, 3C, 3F). The two
different versions of these mentioned in the specification as
"classical" single stage interpolators are a "less conservative"
one, which has a transition band equal to twice the guardband of
the input signal and a "more conservative" one, which has a
transition band equal to the guardband of the input signal (page
3, lines 21-25). This knowledge of the bands of the input signal
also reads on "said set of parameters including a first
transition band". The two types of combined interpolator filters
listed in the applicant's admitted prior art read on "an
interpolator having associated a second transition band, with the
width associated with said second transition band being a
function of a spectral separation of said first transition band
and said image".

To one of ordinary skill in the art at the time of the
invention, it would have been obvious to include the
interpolation filters of the applicant's admitted prior art in
the digital sample rate conversion means of Taylor. Taylor
discusses the use of a plurality of predefined filters with
controllable characteristics including the various widths of
their associated bands; the applicant's admitted prior art
specifically lists particular modifications of these bands that
have been previously used to achieve the desired signal
modification. The applicant's admitted prior art also includes a

number of different types of interpolation filtering, which would

have also enhanced the signal conditioning capabilities of the

system of Taylor. In terms of components, the signal processing

devices in the applicant's admitted prior art are considered

"interpolation filters" that implement both the interpolation and

filtering effects. This aspect of the applicant's admitted prior

art would have also benefited the system of Taylor because the

concurrent filtering and interpolating would have eliminated the

need for buffers or other memories for holding the sample values

between processing stages, as well as shortened the processing

time for the signal values.

Regarding **Claim 2**, Taylor discloses that the filter (110)

is preferably a finite impulse response (FIR) filters, and notes

that the coefficients of this filter can be varied (col. 7, lines

37-66). In dealing with digital signals, the standard operating

procedure of an FIR involves convoluting a finite set of

coefficients with a finite and equal number of values from the

input signal. The inherency of this operation reads on

"producing each data sample associated with said second signal by

convolving a predetermined finite number N of data points with an

equal number of coefficients".

Regarding **Claim 3**, the standard operation of a digital FIR

filter, such as that disclosed by Taylor, inherently involves

convolving the input data with the coefficients of the filter

(col. 7, lines 50-66). The very definition of a finite impulse

response includes the feature that the coefficients of the

realizing filter vary according to the input time currently being

processed.   The digital input data is handled sequentially, and

the contribution of each data sample value towards the single

output value is controlled by the coefficients of the filter and

varies from output sample to output sample.   This reads on

"coefficients vary as a function of the temporal spacing between

the output point and the corresponding input points".

Regarding **Claim 4**, the interpolation function (106) of

Taylor increases the sample rate of the input signal (col. 7,

lines 26-36).   Table 1 in column 9 lists some common conversion

rates, which also shows that the overall sample rate may be

increased by the system of Taylor.   This reads on "varying said

input sample rate increases said input sample rate".

Regarding **Claim 5**, the decimation function (114) of Taylor

decreases the sample rate of the input signal (col. 8, lines 1-

9).   Table 1 in column 9 lists some common conversion rates,

which also shows that the overall sample rate may be decreased by

the system of Taylor.   This reads on "varying said input sample

rate decreases said input sample rate".

Regarding **Claim 6**, the Table in column 9 of Taylor shows

that certain input sample rates, such as 22050 Hz and 11025 Hz,

may specifically be doubled by the system of Taylor.   This reads

on "operating on said plurality of data points includes up-

sampling said plurality of data points by a factor of two".

Regarding **Claim 10**, the filter (110) of Taylor is noted as

preferably being an FIR filter, which reads on "operating on said

plurality of data points to associate said input signal includes

filtering the same with a finite impulse response filter" (col.

7, lines 37-66).

Regarding **Claim 17,** the digital sample rate converter of

Taylor is particularly described in the context of a computer-

executable set of instructions for use in various computing

environments (col. 5, lines 51-67). This reads on, "A computer

program product". With this computing environment, Taylor

specifically discloses the possible use of a number of different

memories, which reads on "a computer readable storage medium for

storing code" (col. 6, lines 1-37). Regarding the remaining

limitations of the claim, please refer to the like teachings of

Claim 1.

Regarding **Claim 18,** please refer to the like teachings of

Claim 6.

5. **Claims 7-9, 11-16, and 19-33** are rejected under 35 U.S.C.

103(a) as being unpatentable over Taylor in view of the

applicant's admitted prior art as applied above, and in further

view of Orban (USPN 6337999).

As detailed above, Taylor discloses a digital sample

rate converter that can handle a continuous range of input and

output sample rates. The teachings of Taylor include upsampling,

filtering, and then downsampling in order to achieve the final

desired sampling rate for an input signal. The applicant's

admitted prior art discloses a variety of well-known filters and

filter shape values, as well as the concept of concurrently

interpolating and filtering with the same component.

        While Taylor and the applicant's admitted prior art

disclose the use of filters, they do not specify:

-        that the filtering involved includes a half band

        filter

Orban discloses the functioning and components for a

digital oversampled differential clipper. The system of Orban

also includes upsampling, downsampling, filtering, and summation

to decrease aliasing in such signal conditioning. Orban also

teaches a method for operating on the aliasing components and

including them in the signal shaping process (col. 5, lines 7-

20). Figure 2 illustrates one given embodiment of the system of

Orban, which includes cascaded pairs of interpolators and filters

that are noted to make the illustrated system particularly

economical efficient (col. 5, lines 21-32). Between stages of

upsampling downsampling, the filters (230-233) in these cascaded

pairs are specifically polyphase halfband FIR filters (col. 4,

lines 22-24). This reads on "operating on said plurality of data

points includes filtering said plurality of data points with a

half-band filter".

        To one of ordinary skill in the art at the time the

invention was made, it would have been obvious to include the

cascaded system arrangement of Orban in the system of Taylor in

view of the applicant's admitted prior art. The motivation

behind such a modification would have been that the cascading

approach would have further enhanced the variable rate

capabilities of the system of Taylor in view of the applicant's

admitted prior art. Taylor and Orban both disclose the basic

sample rate conversion approaches of upsampling, filtering, and

decimating, and both references disclose the conversion of the

input signal to a plurality of different sampling rates. The

combined system would have offered the best combination of

efficiency, as taught by the cascading of the filter/interpolator

pairs, but also the adjustability, as taught by the programmable

features of Taylor. The teachings of Orban would have also been

desirable in combination with those of Taylor and the applicant's

admitted prior art because Orban discloses a manner for not only

removing unwanted aliasing noises, but using them in the

processing them as well.

Regarding **Claim 8**, interpolator-filter combinations were

discussed previously in regards to Claim 1. Decimation being the

inverse of interpolation, decimation filters would be of the same

processing nature as interpolation filters. Orban discloses

filter-decimator pairs (230/250,231/251,232/252,233/253) that

half-band filter an input signal and then decrease the sampling

rate by a factor of two (col. 4, lines 18-24). Taylor also

discloses a sequential filter (110) and decimator (114).

Collectively and following the same arguments and teachings of

well known prior art as discussed previously, these half-band

filter/downsampler pairs and their signal processing features

read on "operating on said plurality of data points includes

decimating said plurality of data points with a half-band

decimator".

Regarding **Claim 9,** Figure 2 of Orban shows one embodiment

of his system that decimates the signal received from upsamplers

(200,201,202,203) with half-band filter/decimator pairs

(230/250,231/251,232/252,233/253) (col. 4, lines 18-24). As

discussed in regards to Claims 6 and 8, this reads on "decimating

a plurality of data points output by said interpolator with a

half band decimator, with varying said sample rate occurring

after receiving said plurality of data points and before

decimating said plurality of data points".

Regarding **Claim 11,** the final processing stages of the

embodiment shown in Figure 2 of Orban include a filter (420) that

is a fifth order infinite impulse response (IIR) filter (col. 4,

lines 37-45). The applicant's admitted prior art also notes that

IIR filters are known to be used in sample rate conversion

systems (page 8, lines 14-23). This reads on "operating on said

plurality of data points to associate said signal includes

filtering the same with an infinite impulse response filter".

Regarding **Claim 12,** please refer to the like teachings of

Claims 1, 6, and 7, noting that Taylor specifically notes that an

intermediate digital signal w(k) is obtained after filtering and

then supplied to the decimation function (114) (col. 7, lines 66-

67 and col. 8, lines 1-9).

Regarding **Claim 13,** Figure 2 of Taylor illustrates that the rate increasing function (106) is followed by the filtering (110) and then the decimation function (114). As noted in regards to Claim 1, the applicant's admitted prior art particularly discloses the concept of an "interpolation filter", wherein the functions of interpolating and filtering are performed by the same component. As noted in regards to Claim 7, Orban teaches the concept of half-band filtering. Collectively, these teachings read on "said halfband filtering is done in conjunction with upsampling said plurality of data points". The orders of the signal processing in Taylor and Orban read on "said interpolation follows said upsampling and halfband filtering".

Regarding **Claim 14,** Taylor discloses that the filtering and decimation stages are performed separately and sequentially (Figure 2 and col. 8, lines 1-9). Orban also discloses a system that involves separate processing circuits for upsampling, filtering, and downsampling. In the upsampling sequence shown in the embodiment in Figure 2 of Orban, the FIR filter (400) performs the operation of half-band filtering the input signal without performing any other function, and the output of this component (400) is then passed along to upsampler (201), which interpolates the input signal (col. 1, lines 60-67 and col. 4, lines 1-7). Each of these specific parts of the sequences of Taylor and Orban read on "said halfband filtering is done, without upsampling, on said plurality of datapoints; and said interpolating follows said halfband filtering".

Regarding **Claim 15**, Figure 2 of Taylor again shows that the
filtering (114) is performed after the interpolation function
(106). The embodiment of the system of Orban shown in Figure 2
includes an interpolator (201), where the output of this
interpolator input into a halfband filter (401). These parts of
the processing sequences read on "said halfband filtering follows
said interpolating".

Regarding **Claim 16**, Figure 2 of Taylor again shows that an
interpolation function (106) and filtering (110) processes are
followed by a decimation function (114), and it is noted that
decimating is a form of interpolation. The embodiment of the
system of Orban shown in Figure 2 includes an upsampler (200) in
series with a half-band FIR filter (400) and another upsampler
(201). Included further down the signal path are another half-
band filter (230) and a decimator (250). With, again, the
understanding that an upsampler is a specific form of
interpolator, these sequences of components in Taylor and Orban
read on "said half-band filtering is done in conjunction with
upsampling" and said interpolating follows said halfband
filtering" and "halfband filtering and decimation following said
interpolation".

Regarding **Claim 19**, please refer to the like teachings of
Claim 7. Regarding **Claim 20**, please refer to the like teachings
of Claim 8. Regarding **Claim 21**, please refer to the like
teachings of Claim 8. Regarding **Claim 22**, please refer to the
like teachings of Claims 10 and 11. Regarding **Claim 23**, please

refer to the like teachings of Claims 6, 12, and 17. Regarding

Claim 24, please refer to the like teachings of Claim 13.

Regarding **Claim 25,** please refer to the like teachings of Claim

14. Regarding **Claim 26,** please refer to the like teachings of

Claim 15. Regarding **Claim 27,** please refer to the like teachings

of Claim 16.

Regarding **Claim 28,** the applicant discloses as part of the

background of the specification that Nth order FIR sample rate

converters are known in that art fall under the category of

'intermediate quality' converters (page 8, lines 4-10). The

applicant also gives a formula for determining the complexity of

the involved computation of such a converter (Page 8, lines 7-

10). This inherently reads on "interpolator is an FIR Nth order

sum of products interpolator with linear interpolation of

coefficients".

Regarding **Claim 29,** please refer to the like teachings of

Claim 28.

Regarding **Claim 30,** the details of the widths of the

transition bands of classical type of interpolation filters were

discussed in reference to Claim 1. One of these admitted, well

known interpolation filters involved a transition band that was

twice the width of the guardband of the input signal (page 4,

lines 14-15). Looking at Figure 2B, it can be seen that this

width spans from the highest edge of the lowest frequency image

to the lowest edge of the passband of the next image. This reads

on "interpolator has a transition band beginning adjacent the top

of a passband and ending adjacent the bottom of a passband
image".

Regarding **Claim 31,** please refer to the like teachings of
Claim 30.

Regarding **Claim 32,** one of the specific filtering
components that Orban teaches is a fifth-order IIR filter with a
sixth-order allpass group detector (col. 4, lines 39-42). With
this arrangement in place, it would have been inherent that
different orders of allpass detectors would have been usable in
the system. Different orders perform the same general processing
function, except with different numbers and arrangement of
components, and with slightly variant output responses. The
specifics of each of the different orders of allpass components
would have been well known in the art, thus making evident the
advantages and disadvantages of different orders in use with
different systems. This reads on "said halfband filter is an IIR
filter composed of first order allpass blocks".

Regarding **Claim 33,** please refer to the like teachings of
Claim 32.

Response to Amendment

On page 8, lines 19-21, the applicant has stated, "The
amendments introduced are by way of clarification and no new
limitations have been introduced into the claims and,
accordingly, no further search is required". The examiner
respectfully disagrees. While the amendments have clarified the

claims in view of the original specification, the amendments

change the scope of what was originally included in the

previously examined claims. Thus, these changes do require a new

search. A clear example of this can be seen in the amended

language of Claim 1. The previous claim limited the method to

just "varying said sample rate" of the input signal, whereas the

new claim limitations include "*dynamically* varying" the sample

rate "*to any one of the plurality of differing output samples

rates*". This limitation includes a different, more specific form

of varying that was not included or suggested in the original

claim language. Claim 12 includes the new feature of

"intermediate data points" which after being formed by the

halfband filter, are interpolated. These explicit data points

impart an order to the previous method, which simply "comprised"

filtering and interpolating. The new rejections in this office

action reflect this change in limitations. Arguments made

against the previous rejections or references in view of this new

limitation are considered moot, and are therefore not addressed

in this office action.

On page 10, lines 16-17, the applicant has stated, "Clearly

Orban does not describe obtaining differing output sample rates

based on an interpolation process". While the "differing output

sample rates" limitation is new to the claim language and as

detailed above is not considered in this response to Orban, it is

noted that, depending on the applicant's interpretation of "an

interpolation process", Orban does include several stages of

interpolation and filtering, each of which change the original

sample rate to a plurality of varied sample rates (see Figure 2

of Orban).

On page 10, lines 17-19, the applicant has stated, "Orban's

"interpolator," being an upsampler which is merely inserting

zeros into the signal, does not have any associated transition

band". The Examiner respectfully disagrees regarding the

applicant's interpretation of the interpolator in the system of

Orban. In column 3, lines 7-12, Orban states that the upsampler

of the basic form of the invention can be a prior art upsampler

well known in the art. The applicant's admitted prior art lists

a number of prior art upsamplers, including those with transition

bands. As listed in the previous office action, it is the

combination of these two teachings that are used in the rejection

of Claim 1, not Orban alone.

On page 10, lines 21-23, the applicant has stated, "It is

thus submitted that neither Orban nor the prior art description

of the present application teach or even suggest an interpolator

having associated therewith a second transition band". The

examiner respectfully disagrees. As detailed in the office

action, the applicant's admitted prior art specifically discusses

interpolators with transition bands. The criteria for the widths

of the transition bands is also discussed in the applicant's

admitted prior art, which is also noted in the previous office

action (final paragraph of page 5, which continues onto page 6).

On page 11, lines 9-10, the applicant has stated, "Orban's interpolators, whether considered alone or in combination with their associated filters, never allow "dynamically varying" the sampling rate". While again, the limitation of "dynamically" varying a sample rate is a new limitation and cannot be argued in regards to previous rejections and references, it is noted that the basic form of the invention, detailed in column 1, lines 6-56, simply includes upsampling, without a restriction to rate. Orban, as mentioned previously, also notes that the upsampler in the basic form of the system may be an upsampler well known in the art (col. 3, lines 7-11). It is correct that one embodiment shown by Orban includes a 2X filter, but the issue of "dynamically" changing the rate of this filter or not illustrating other interpolation rates is not addressed. Because these possibilities are not addressed, it cannot simply be interpreted to mean that the reference of Orban teaches away from them or does not "allow" such limitations to be included with the disclosed interpolation system. This response applies to the argument presented on page 11, lines 22-23 as well as other related arguments concerning a "dynamic" ability and Orban's interpolator.

On page 11, line 28 through page 12, line 2, the applicant has stated, "Clearly, Orban advocates cascading separate stages for the purpose of efficiency and thus teaches away from combining them in any manner". The examiner respectfully disagrees. The cascading of the filters is the feature that

makes the embodiment efficient; Under the understanding that an

"interpolation filter" of the prior art is a single component,

there exists a motivation for combining the interpolator and the

filter in each stage, which is outlined in the language of the

previous office action, "substituting a combined interpolation

filter for the separate interpolator and filter". Substituting

an "interpolator filter" for all of the interpolators and filters

of Orban, particularly those in Figure 2 would have adversely

changed the invention of Orban, but this is not what is proposed

in the previous office action.

On page 12, lines 10-14, the applicant has stated, "In the

present invention, the sample rate can be varied with a single

interpolator, and converting the input signal to differing sample

rates may be accomplished by a single interpolator". The

examiner notes, however, as discussed previously, this ability to

convert a sample rate to a plurality of sample rates based, was

not represented in the original claim language. This renders

moot such an argument against previous rejections. This response

regarding new limitations also applies to the argument presented

on page 13, lines 19-21.

On page 14, lines 3-4, the applicant has stated, "Orban

does not teach or even suggest independently programmable

parameters to provide a varying sample rate". While the examiner

agrees with this statement, the applicant's admitted prior art

does specify that prior known art filters include adjustable

parameters. Lines 30-32 of page 7 of the applicant's disclosure

states that "When a windowing function is used, the width of the

transition band and the filter quality can be independently

controlled, but in general there is no independent control of

stopband rejection and passband ripple". By stating that "in

general" independent controls are not available, the statement is

effectively made that prior art includes exceptions that do have

independent controls. It is also noted that "independently

programmable parameters" is a substantially broad term. The

system of Orban involves a number of interpolators that can be

prior art upsamplers, though preferably inserts zeros as every

other value for a signal; the fact that zeros are used for each

filter, and in the detailed embodiment, pad every other value of

the input signal with a zero is considered to read on

"independently programmable parameters". The lines cited above

more specifically illustrate an example where the transition band

and filter quality can be controlled, which also reads on

"independently programmable parameters". This response applies

to the argument presented on page 14, lines 10-21.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Graham whose telephone number is (703) 308-6729. The examiner can normally be reached on Monday-Friday (7:30-4:30), excluding alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Isen, can be reached at (703) 305-4386. The fax number for the organization
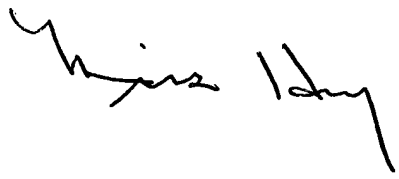
where this application or proceeding is assigned is 703-872-9314

for regular communications, and 703-872-9315 for After Final

communications.

Any inquiry of a general nature or relating to the status

of this application or proceeding should be directed to the

receptionist whose telephone number is (703) 305-3900.

Andrew Graham
Examiner
A.U. 2697

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August 22, 2003

MINSUN OH HARVEY
PRIMARY EXAMINER